MULTIMEDIA **UNIVERSITY**

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FINAL EXAMINATION

TRIMESTER 3, 2017 / 2018

PPS0335 – PROBLEM SOLVING AND PROGRAMMING
(Foundation in Information Technology)

1 JUNE 2018
9.00 a.m. – 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of 3 pages (excluding the cover page) with 5 questions only.

2. Attempt **ALL** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please write all your answers in the Answer Booklet provided.

QUESTION 1 [10 Marks]

a. Define the term 'algorithm' and 'pseudocode' in programming.

(3 marks)

b. Create a trace table to determine the output of the following algorithm:
    Step 1: set x = 5
    Step 2: set y = 10
    Step 3: set z = 3
    Step 4: set x = x+y
    Step 5: set y = x +z
    Step 6: set z = x+y+z
    Step 7: display x, y,z

(4.5 marks)

c. Suggest a suitable data type for the followings:
    i.   45.4
    ii. 95
    iii. 'Jack'
    iv. 25.49
    v.   'm'

(2.5 marks)

QUESTION 2 [10 Marks]

a. Problem solving is not an easy process. It takes practice and time to make it perfect, but in the long run the process proves to be of great benefit. List **THREE** difficulties with problem solving.

(3 marks)

b. IPO chart can be used to break down a problem into its components. State what is "IPO chart"?

(1 mark)

c. Susan, who works for Quality Builders, needs a program that will calculate and display the number of single rolls of wallpaper needed to cover a room. The salesclerk will provide the length, width, and ceiling height of the room, in feet. He or she also will provide the number of square feet a single roll will cover. Create an IPO chart to help Susan to solve this problem.

(6 marks)

QUESTION 3 [10 Marks]

a. Draw a flowchart for a program that accepts a set of numbers and finds the smallest among them. The program stops when the user enters number 999.

(6 marks)

b. Consider the following program in some unidentified language which supports procedures with parameters.

```
function joe(int a, int b, int c)
begin
a = b + c;
b = c + 1;
print a, b, c;
end

function main
begin
int i = 5;
int j = 10;
int k = 15;
joe(i, j, j + k);
print i, j, k;
end
```

i.   What will be the output of the program if all parameters are passed by value.

(2 marks)

ii. What will be the output of the program if parameter *a* and *b* are pass by reference, and *c* by value.

(2 marks)

QUESTION 4 [10 Marks]

a. Suri is taking computer programming subject at one of local university. She was asked by her lecturer to write a program that will check the room temperature condition. She is uncertain whether to use positive logic or negative logic in decision control structure instruction. Help Suri to write decision structure algorithm using the;
    i.   positive logic
    ii. and then convert it to negative logic

Below are the set of conditions:

Temperature	Room Temperature Condition
Below 0^0	"Freezing"
Between 0^0 and 20^0	"Cool"
Between 20^0 and 30^0	"Warm"
Above 30^0	"Hot"

(8 marks)

Continued...

b. Which flowchart symbols are normally used in the sequential logic structure?

(2 marks)

QUESTION 5 [10 Marks]

a. Draw a flowchart that will prompt the user to enter a number and a character. If the character is "S" the program will display the Square of the number; if it is "C" it will display the Cube of the number.

(8 marks)

b. Define how incrementing and accumulating task are different in a loop structure.

(2 marks)

End of Paper